

NCS 45, Points of concern that the applicant needs to address

Based on a quick review of the applicant's proposed SAR change for shielding analysis, the staff finds that the following issues need to be addressed:

1. Content slump during an accident

The applicant needs to address potential content slump or slippage to the bottom of the cask during an accident. The SAR does not seem to address this issue. It is not clear either what is used to hold the content to prevent them from slumping into the bottom part of the content cells.

2. Uncertainties in the SAS2H source term calculation

The SAS2H has about 10% uncertainties in predicting the concentrations of isotopes that major gamma or neutron emitters. The uncertainties are particularly important for high burnup, i.e., greater than 45 GWd/MTU because the code is not benchmarked for high burnup beyond 45 GWd/MTU. NUREG/CR-6701 provides detailed discussion about the uncertainties in the isotopic concentration and consequently the source term predictions. The applicant needs to address this issue. A typical approach for addressing this issue is to add a 10% penalty factor to the calculated source terms.

3. Uncertainties in the dose rate calculation result

Section 4.2 of the proposed Safety Analysis Report provides results of dose rate calculations for various contents. However, none of these data include discussion of treating the uncertainties in these calculations. Since SAS4 code is a Monte Carlo method, there must be uncertainties associated with these results. The applicant needs to address this issue.